COSEWIC
Status Appraisal Summary

on the

Silver Hair Moss
Fabronia pusilla

in Canada

ENDANGERED
2012

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada

COSEPAC
Comité sur la situation
des espèces en péril
au Canada

COSEWIC status appraisal summaries are working documents used in assigning the status of wildlife species suspected of being at risk in Canada. This document may be cited as follows:

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COSEWIC
Assessment Summary

Assessment Summary – May 2012

Common name
Silver Hair Moss

Scientific name
Fabronia pusilla

Status
Endangered

Reason for designation
This is a small species that grows among other mosses as an epiphyte on trees or on rock faces. In Canada, it is known from only one cliff in southwestern British Columbia. Although the species has not been found during recent surveys, the expanse of available habitat at the only known site, combined with the small stature of the moss, suggests that the species may still be present in Canada.

Occurrence
British Columbia

Status history
Designated Endangered in November 2002. Status re-examined and confirmed in May 2012.

COSEWIC
Status Appraisal Summary

Fabronia pusilla Raddi
Silver Hair Moss — Fabronie naine
Range of occurrence in Canada: British Columbia

Current COSEWIC Assessment: Endangered

Status category:
☐ XT ☒ E ☐ T ☐ SC

Date of last assessment: November 2002

Reason for designation at last assessment: Silver Hair Moss is a small species that grows among other mosses, either as an epiphyte on trees or on rock faces. In Canada, it is known from two locations: one that is now submerged and a second associated with a cliff in southwestern British Columbia. The latter is the northernmost location for this species. Although the species was not rediscovered at its extant site during recent surveys, the expanse of available habitat at the only known sites, combined with the small stature of the moss, suggests that the species may still be present in Canada.

Criteria applied at last assessment: D1

If the earlier version of criteria was applied[1], provide correspondence to current version of the criteria:

SSC Recommendation:

☒No change in status and criteria

☐No change in status, new criteria

Evidence: Additional surveys on Sumas Mountain have not rediscovered the original population or located any new sites.

Wildlife species:

Change in eligibility, taxonomy or designatable units: yes ☐ no ☒

Explanation:

There have been no changes in the designatable unit or with the taxonomy for this species.

Range:

Change in Extent of Occurrence (EO): yes ☐ no ☒ unk ☐
Change in Index of Area of Occupancy (IAO): yes ☐ no ☒ unk ☐
Change in number of known or inferred current locations:* yes ☐ no ☒ unk ☐
Significant new survey information: yes ☒ no ☐

[1] An earlier version of the quantitative criteria was used by COSEWIC from October 1999 to May 2001 and is available on the COSEWIC website: http://www.cosewic.gc.ca/eng/sct0/original_criteria_e.cfm

Explanation:

No new populations have been found for this species in British Columbia or Canada.

* Use the IUCN definition of "location"

Population Information:

Change in number of mature individuals:	yes ☐ no ☒ unk ☐
Change in total population trend:	yes ☐ no ☒ unk ☐
Change in severity of population fragmentation:	yes ☐ no ☒ unk ☐
Change in trend in area and/or quality of habitat:	yes ☐ no ☒ unk ☐
Significant new survey information	yes ☐ no ☒

Explanation:

Eight targeted surveys by experts, including W.B. Schofield (who found the original population), have been conducted in the area of the original population location and the species has not been found.

Threats:

Change in nature and/or severity of threats: yes ☐ no ☒ unk ☐

Explanation:

Threats remain essentially the same as those stated in COSEWIC (2002); construction of new home sites continues in and around Sumas Mountain (Figure 1). In addition to urban development according to the Community Plan for the Sumas Mountain area; some mineral claims overlap part of Sumas Mountain Regional Park, which may pose a threat to this species.

Protection:

Change in effective protection: yes ☒ possibly no ☐

Explanation:

On 11 July 2008 "the Provincial Government approved the extension of the City of Abbotsford's boundaries to include the privately owned area known as "Sumas Mountain". As a result of this decision the Official Community Plan (OCP) guiding land use within this area was also transferred to the City of Abbotsford from the Fraser Valley Regional District". On Feb. 10, 2011, Metro Vancouver purchased almost 67 hectares of forested property on the western flank of Sumas Mountain for Park. This new park shares a northern boundary with Sumas Mountain Regional Park and may provide additional effective protection for this species.

Rescue Effect:

Change in evidence of rescue effect: yes ☐ no ☒

Explanation:

Since the species is rare in adjacent US states, they are unlikely to be sources of recolonization for the Canadian population.

Quantitative Analysis:

Change in estimated probability of extirpation: yes ☐ no ☐ unk ☒

Details:

There are no data to estimate the probability of extirpation.

Summary and Additional Considerations:

In 2008 a Recovery Strategy for the Silver Hair Moss was released by Environment Canada, which included a recommended schedule of studies to identify critical habitat, for completion by 2010. Because the one presumed extant population has not been reconfirmed, and no new populations have been found at either location, studies on the ecological requirements for Silver Hair Moss have not been possible.

Discussions with members of the Recovery Team (pers. comm. 2011) did not result in new information that would change the status of this species.

At the historic location of Deer Park, Lower Arrow Lakes region, Ben Tan collected 204 bryophyte vouchers in 1977 (this was not reported in the COSEWIC 2002 status report); however, he did not find *Fabronia pusilla*. While sandstone does occur within this area, the water levels rose 12 m after the Hugh Keenleyside Dam was completed in October of 1968.

Table 1 shows the number of times that visits were made to the Sumas Mountain area, both incidental trips and trips made specifically to look for the Silver Hair Moss.

According to the 4th edition of the Mineral Resource Education Program of British Columbia map (2011), the only sandstone deposits in southwestern British Columbia occur on Sumas Mountain. Since the cliffs where the species was found are extensive in the area where it was found, it is possible that this rare moss may still be extant there.

This map also lists the Sumas Mountain sandstone deposits as being an active industrial mineral mine/quarry site. Steve Joya (pers. comm. 2011) also commented that Sumas Mountain is the only place in the region that has sandstone deposits.

Acknowledgements and authorities contacted:

Costanzo, Brenda. Silver Hair Moss Recovery Team Chair, Plant Species at Risk Biologist, Ecosystems Branch, B.C.

Ryan, Mike, Silver Hair Moss Recovery Team.

Golinski, Karen. Silver Hair Moss Recovery Team, consultant. Victoria, B.C.

McIntosh, Terry. Botanist. Silver Hair Moss Recovery Team.

Ley, Linda. Bryologist, consultant. Ottawa.

Joya, Steve. Bryologist. Vancouver.

Information sources:

British Columbia Bryophyte Recovery Team. 2007. Recovery strategy for the silver hair moss (*Fabronia pusilla* Raddi) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 14pp.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 2002. COSEWIC assessment and status report on the silver-hair moss, *Fabronia pusilla*, in Canada. Environ. Can., Ottawa, ON.

City of Abbotsford. 29 July 2011. Abbotsford Economic Development & Planning Services. www.abbotsford.ca/economic_development_and_planning_services Metro Vancouver Media Release, 20 Feb. 2011. New Metro Vancouver Park Land on Sumas Mountain. Fraser Valley Regional District. www.fvrd.com

Environment Canada. 2008. Recovery Strategy for the Silver Hair Moss (*Fabronia pusilla*) in Canada. *Species at Risk Act* Recovery Strategy Series. Environment Canada, Ottawa. 4 pp. + Appendix.

Mineral Resource Education Program of BC, 4th edition (2011). www.bcminerals.ca/s/currentoperations.asp

Table 1. Collecting history for Sumas Mountain and targeted surveys for Silver Hair Moss, *Fabronia pusilla* Raddi. Based on Herbarium Records at the University of British Columbia and discussions with Terry McIntosh and Steve Joya.

Surveyor	Date of survey	Found/ not found	Location
W. Schofield	1 Mar. 1964	not found	Sumas Mountain near Abbotsford
W. Schofield	27 Feb. 1966	not found	Matsqui area, near Cox, Sumas Mountain
W. Schofield	18 Feb. 1967	not found	Sumas Mountain west end
W. Schofield	23 April 1967	not Found	Sumas Mountain near Matsqui
W. Schofield	10 Mar. 1968	found	Sumas Mountain west end
W. Schofield	10 Mar. 1968	found	Sumas Mountain west end near Chilliwack Co.
W. Schofield with C. Chuang & W. Zales	26 Sept. 1970	not found	Sumas Mountain Escarpment at west end
W. Schofield with B. Bohm	28 June 1973	not found	Sumas Mountain Escarpment, near Chilliwack
W. Schofield	24 June 1974	not found	Jack Macdonald Park, near base of Sumas Mountain
W. Schofield	27 Mar. 1976	found	Sumas Mountain Escarpment
W.Schofield with T. McIntosh	16 Nov. 2001	not found	Sumas Mountain west end
T. McIntosh	28 Nov. 2001	not found	Sumas Mountain
T. McIntosh	4 Dec 2001	not found	Sumas Mountain
W. Schofield with D. Jamieson & P. Henderson	28 June 2003	not found	Sumas Mountain Escarpment near Chilliwack Co.
T. McIntosh	2003	not found	Sumas Mountain
T. McIntosh	2003	not found	Sumas Mountain
T. McIntosh with Schofield	25 April 2005	not found	Sumas Mountain west end Co.
T. McIntosh	23 June 2007	not found	Sumas Mountain
T. McIntosh with S. Joya	19 Feb. 2008	not found	Sumas Mountain
T. McIntosh with S. Joya	3 April 2009	not found	Sumas Mountain
T. McIntosh	2 July 2010	not found	Sumas Mountain

Figure 1. Sumas Mountain, British Columbia showing the urban development and mining activity.

TECHNICAL SUMMARY

Fabronia pusilla Raddi
Silver Hair Moss — Fabronie naine
Range of occurrence in Canada: British Columbia

Demographic Information

Generation time (usually average age of parents in the population; indicate if another method of estimating generation time indicated in the IUCN guidelines (2008) is being used)	unknown
Is there an [observed, inferred, or projected] continuing decline in number of mature individuals?	unknown
Estimated percent of continuing decline in total number of mature individuals within [5 years or 2 generations]	unknown
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last [10 years, or 3 generations].	unknown
[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next [10 years, or 3 generations].	unknown
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any [10 years, or 3 generations] period, over a time period including both the past and the future.	unknown
Are the causes of the decline clearly reversible and understood and ceased?	unknown
Are there extreme fluctuations in number of mature individuals?	unknown

Extent and Occupancy Information

Estimated extent of occurrence	4 km²
Index of area of occupancy (IAO) (Always report 2x2 grid value).	4 km²
Is the total population severely fragmented?	unknown
Number of locations* *1. Sumas Mtn* *Known also from Deer Park (Columbia River, a historic location presumed submerged by reservoir*	1
Is there an [observed, inferred, or projected] continuing decline in extent of occurrence?	unknown
Is there an [observed, inferred, or projected] continuing decline in index of area of occupancy?	unknown
Is there an [observed, inferred, or projected] continuing decline in number of populations?	unknown
Is there an [observed, inferred, or projected] continuing decline in number of locations*?	unknown
Is there an [observed, inferred, or projected] continuing decline in [area, extent and/or quality] of habitat?	unknown
Are there extreme fluctuations in number of populations?	unknown
Are there extreme fluctuations in number of locations*?	unknown
Are there extreme fluctuations in extent of occurrence?	unknown
Are there extreme fluctuations in index of area of occupancy?	unknown

* See Definitions and Abbreviations on COSEWIC website and IUCN 2010 for more information on this term.

Number of Mature Individuals (in each population)

Population	N Mature Individuals
Sumas Mountain	unknown
Total	unknown

Quantitative Analysis

Probability of extinction in the wild is at least [20% within 20 years or 5 generations, or 10% within 100 years].	unknown

Threats (actual or imminent, to populations or habitats)

Continued urban development is continuing within the area, and possibly future mining activities.

Rescue Effect (immigration from outside Canada)

Status of outside population(s)? Rated by NatureServe as G4, British Columbia SH, Montana as S1.	
Is immigration known or possible?	unknown
Would immigrants be adapted to survive in Canada?	unknown
Is there sufficient habitat for immigrants in Canada?	unknown
Is rescue from outside populations likely?	unlikely

Current Status

COSEWIC:
Endangered (2002, 2012)

Additional Sources of Information:
See above

Status and Reasons for Designation

Status:	**Final Criteria:**
Endangered	D1
Status History: Designated Endangered in November 2002. Status re-examined and confirmed in May 2012.	
Reason for Designation: This is a small species that grows among other mosses as an epiphyte on trees or on rock faces. In Canada, it is known from only one cliff in southwestern British Columbia. Although the species has not been found during recent surveys, the expanse of available habitat at the only known site, combined with the small stature of the moss, suggests that the species may still be present in Canada.	

Applicability of Criteria

Criterion A: Not applicable. Decline data unavailable.
Criterion B: Not applicable. Decline and fluctuation data unavailable.
Criterion C: Not applicable. Decline data unavailable.
Criterion D: Meets threshold for Endangered D1, assuming that population numbers are below 250 given the search effort since the last assessment.
Criterion E: Not done.

COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS
(2012)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.

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